Taarini Ananya   Homework 4

1.1 To find the assembly instruction for 0x00c6aa23, it first needs to be converted from hex to binary. Then the values need to be split up, calculated, and put together

0x00c6aa23 → 0000 0000 1100 0110 1010 1010 0010 0011

Now, these values of 0100011 indicate an opcode for store word (sw)
rd=10100 funct3=010 rs1=01101 rs2=01100 imm=0000000
rd in decimal is 20, rs1 is 13, rs2 is 12 and the instruction is sw.
This equals sw x12, 20(x13)

1.2 The instruction sw in ALUop is 00 and the resulting add's operation is 0010

1.3 The new PC address after this instruction is executed is PC+4 because there are no branches or jumps

1.4 PCsrc has a MUX value of 0 because it's not a branch or jump, and the output from above is PC+4. The ALUsrc has 1 because sw stores with an immediate value, with output 20. The MemtoReg is used for writing back to a register, which does not happen for sw to store.

1.5 For ALU, the inputs are x13 and 20 immediate. For adder, the inputs are the program counter and 4. The inputs for the second add unit are PC and immediate shifted left

1.6 Read register 1 = x13
Read register 2 = x12
Write register = nothing to write
Write data = same as above
RegWrite = nothing for register write either